Richmond Refinery LPS Bulletin – Reliability

Compressor Unloaded (loss of flow) Due to Blown Fuse of Loader Relays

Impact ERM: 35465

Location:
Richmond Refinery

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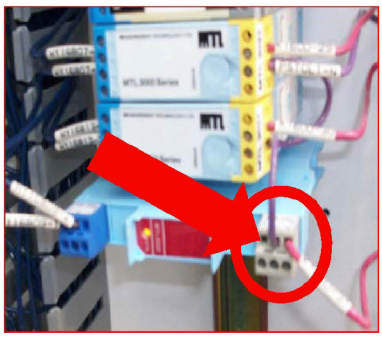
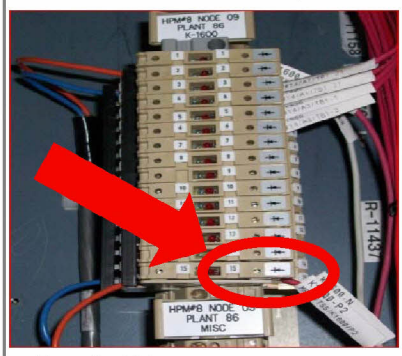
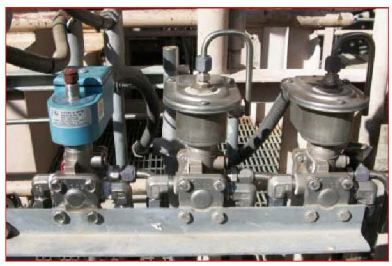
Investigation Number: 22385



Wires that were shorted causing fuse to blow in K-1600 local panel.



Fuse that blew.



Solenoids that de-energized and unloaded K-1600.

Incident Description:

On Monday Apr. 9 2012, I&E mechanics were in the process of troubleshooting and repairing a compressor loader relay. The board operator was alerted that there was a indication of loss of flow for K-1600. The outside operator reported that the compressor was running and sounded normal at that time, but verified that the recycle stream had no flow. The OMC responded to investigate K-1600 to verify that the instrument air supply had not been interrupted, but found that the compressor had unloaded due to a loss of power to the loader relays.

Investigation Findings:

1) Drawings were not available and mechanics did not have a clear understanding of the solenoid circuitry due to lack of drawings.
2) There was no field indication showing that the solenoids had chopped, or anything that provided operations information of the state of the failure.

Lessons Learned:

1) Power protection for critical instrument system should be designed to allow isolation on the run.
2) An effective use of Stop/Pause Work Authority could have been implemented in this situation, **which may have avoided the unloading of the machine.**

What Worked Well:

1) The solenoid circuit wiring was properly tagged which helped the mechanics find the location of the blown fuse and replace it.
2) Operations worked with I&E mechanics to quickly identify the issue, thereby minimizing the losses associated with this failure.

Recommendations:

1) Mechanics must have a clear understanding of how the circuit works and how it could affect the operation of the plant before beginning work.
2) Always have a drawing showing the relationship between components that are being worked on before starting job. ***If drawings are not available,*** make certain that the right people are involved before proceeding with a task.
3) Consider failure indication of solenoid instrumentation to allow easier and more rapid understanding of the failure state.

Tenets of Operations Violated:

Tenet #10 – Always involve the right people in decisions that effect procedures or equipment